

AMENDMENTS TO THE CLAIMS

Please cancel Claims 1-8; amend Claims 9 and 10; and add new Claims 11-26 as follows.

LISTING OF CLAIMS

1. – 8. (cancelled)

9. (currently amended) A simultaneous block melting apparatus ~~using a laser provided with a mechanism for working the method described in claim 1.~~
comprising:

a laser source generating a laser beam;

a diffraction element shaping said laser beam into a predetermined shape;

a focusing element focusing said predetermined shaped laser beam onto a target area of a worked material, said predetermined shaped laser beam simultaneously melting substantially all of said worked material irradiated by said predetermined shaped laser beam.

10. (currently amended) A simultaneous block melting apparatus ~~using a laser~~ as set forth in claim 9, wherein said diffraction ~~type-optical~~ element is a block of zinc selenide formed with relief shapes and step differences by photolithography and etching.

11. (new) A laser-melting apparatus focusing a laser beam on an object to be melted, comprising:

a laser source generating a laser beam having a predetermined beam shape;

a diffraction type optical element outputting the laser beam having a predetermined beam shape by diffraction and transmission of the laser beam input from said laser source; and

a condensing lens condensing the laser beam output from said diffraction type optical element and orienting to said object to be melted.

12. (new) A laser-melting apparatus as set forth in claim 11, further comprising a lens disposed between said laser source and said diffraction type optical element adjusting the laser beam output from said laser source to a predetermined diffusion angle, then inputting the same into said diffraction type optical element.

13. (new) A laser-melting apparatus as set forth in claim 11, further comprising a cooling unit cooling said diffraction type optical element.

14. (new) A laser-melting apparatus as set forth in claim 11, wherein said diffraction type optical element outputs a laser beam having a beam shape different from the shape of the input laser beam so as to focus a laser beam correspond to the shape of at least one joint portion formed on said object.

15. (new) A laser-melting apparatus as set forth in claim 14, wherein said diffraction type optical element outputs a laser beam having a shape splitting into a plurality of beams so that said joint portion is formed at a plurality of positions away from each other on said object.

16. (new) A laser-melting apparatus as set forth in claim 15, wherein said condensing lens is single and whereby the plurality of beams are focused simultaneously and respectively.

17. (new) A laser-melting apparatus as set forth in claim 14, wherein said diffraction type optical element outputs a laser beam having a linear shape so that said joint portion is formed linearly extending on said object.

18. (new) A laser-melting apparatus as set forth in claim 11, wherein said diffraction type optical element splits an input single laser beam into a plurality of beams and then outputs them.

19. (new) A laser-melting apparatus as set forth in claim 18, further comprising a power sensor receiving either of the plurality of beams and detecting the energy level thereof, and a processing circuit processing the output of said power sensor and estimating the overall energy level focused on said object.

20. (new) A laser-melting apparatus as set forth in claim 19, wherein said condensing lens is single and whereby the plurality of beams are focused simultaneously and respectively.

21. (new) A laser-melting apparatus as set forth in claim 20, further comprising a lens disposed between said laser source and said diffraction type optical element, adjusting the laser beam output from said laser source to a predetermined diffusion angle, then inputting the same into said diffraction type optical element.

22. (new) A laser-melting apparatus as set forth in claim 11, further comprising a cooling unit cooling said diffraction type optical element.

23. (new) A laser-melting apparatus as set forth in claim 16, further comprising a lens disposed between said laser source and said diffraction type optical element, adjusting the laser beam output from said laser source to a predetermined diffusion angle, then inputting the same into said diffraction type optical element.

24. (new) A laser-melting apparatus as set forth in claim 23, further comprising a cooling unit cooling said diffraction type optical element.

25. (new) A laser-melting apparatus as set forth in claim 17, further comprising a lens disposed between said laser source and said diffraction type optical element, adjusting the laser beam output from said laser source to a predetermined diffusion angle, then inputting the same into said diffraction type optical element.

26. (new) A laser-melting apparatus as set forth in claim 25, further comprising a cooling unit cooling said diffraction type optical element.